

SN. 09/876,179

ATTORNEY DOCKET NO. WATA:012

REMARKS

Claims 1-10 remain pending in this application for which applicants seek reconsideration.

Amendment

Independent claim 1 has been amended to clarify that the first transparent films are composed of a first dielectric material and the second transparent films are composed of a second dielectric material. See page 11 of the present disclosure for support. No new matter has been introduced.

35 U.S.C. § 112 Rejection

The examiner rejected claims 7 under 35 U.S.C. § 112, ¶ 2, because the expression "not more than" is deemed a negative limitation. Applicants traverse this rejection because this expression, which the examiner understood as "less than or equal to," is not a negative limitation. The original expression is an expression that the PTO routinely accepts. See for instance, USPs 6,447,921 or 6,316,343. To the extent that the PTO routinely issues claims with this expression, applicants takes Official Notice that the expression in question is quite definite. Indeed, if this expression were indefinite, then the PTO would not have issued thousands of patents containing this expression in the claims. Moreover, even if the same expression is deemed a negative limitation, there is nothing inherently ambiguous or uncertain about a negative limitation. See MPEP § 2173.05(i). Applicants therefore request the examiner to withdraw this rejection.

Art Rejection

Claims 1-10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ouderkirk (USP 6,262,842) in view of Kamiya (USP 6,317,179). Applicants traverse this rejection because the combination would not have taught the claimed reflective mirror structure.

Claim 1 calls for a reflective mirror comprised of alternately arranged layers of first (high refractive index) transparent films and second (low refractive index) transparent films. The first layers are composed of a first dielectric material and the second transparent films are

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composed of a second dielectric material. At least one of the first and second transparent films is arranged such that the film thickness thereof increases progressively or decreases progressively with distance from the transparent substrate to suppress ripples in an optical spectrum or optical transmission spectrum across a visible region. The applied combination simply would not have taught or suggested such a feature.

Ouderkirk discloses a reflective polarizing element 8 composed of alternately stacked layers 2, 4. One of these layers 2, 4 is made of material having birefringence properties (index of refraction affected by stretching). Ouderkirk teaches increasing the index of refraction of one of these layers by stretching the same. The difference in the refractive index at each boundary between the alternating layers will reflect part of the ray 5, as illustrated in Fig. 2b. See column 4, lines 2-16. Ouderkirk also discloses staking these layers to form a thickness gradient from top to bottom using a feedback method. See column 12, lines 2-17.

Again, claim 1 calls for a reflective mirror, not a reflective polarizing element. In this regard, in contrast to the examiner's assessment, the embodiment (example 6, Figs. 1 and 2) of Ouderkirk that the examiner relied upon does not disclose or teach a reflective mirror as called for in claim 1. The examiner is completely silent regarding this distinction. Indeed, Ouderkirk merely discloses that its reflective polarizing element 8 can be composed of layers having different refractive index at each boundary between the alternating layers to enable some part of light to reflect (see Fig. 2b), and can have a thickness gradient from top (thick) to bottom (thinner). But Ouderkirk neither discloses nor suggests that its mirror (embodiments 1 and 2) can be construed that way. Moreover, Ouderkirk neither discloses nor teaches providing a thickness gradient for purposes of suppressing ripples in an optical spectrum or optical transmission spectrum across a visible region in a reflective mirror.

Kamiya would not have alleviated Ouderkirk's shortcomings noted above, even if the combination were deemed proper. Indeed, Kamiya also would not have taught providing a thickness gradient for purposes of suppressing ripples in an optical spectrum or optical transmission spectrum across a visible region in a reflective mirror.

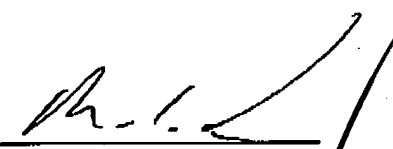
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Conclusion

Applicants submit that claims 1-10 patentably distinguish over the applied references and thus urge the examiner to issue an early Notice of Allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicants urge the examiner to contact the undersigned to expedite prosecution.

Respectfully submitted,

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ATTACHMENT
MARKED UP VERSION

IN THE CLAIMS:

Claim 1 has been amended as follows:

1. (Amended) A substrate for a reflection type liquid crystal display element, comprising:

a transparent substrate; and

a reflective mirror formed on top of said transparent substrate;

wherein said reflective mirror comprises a predetermined number of high-refractive-index first transparent films composed of a first dielectric material and low-refractive-index second transparent films composed of a second dielectric material laminated alternately on said transparent substrate, and

wherein either or both of said first transparent films and said second transparent films are arranged such that a film thickness thereof increases progressively or decreases progressively with distance from said transparent substrate to suppress occurrence of ripples in an optical spectrum or optical transmission spectrum across a visible region.--